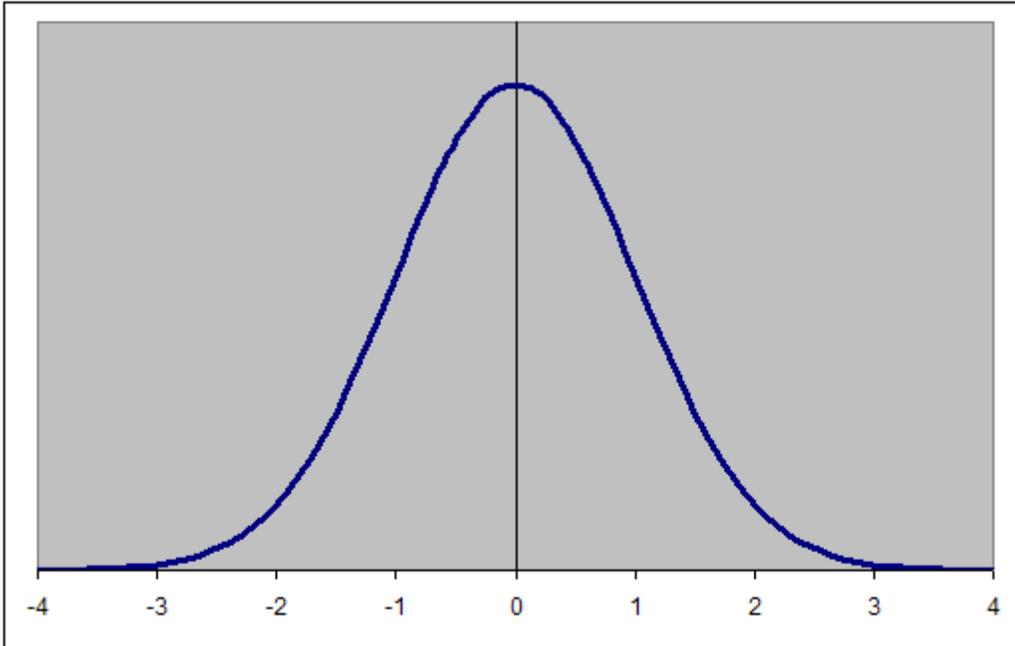


MAT 142: College Mathematics

Lecture Notes: Chapter 15 (Part 2)

15.4: The Normal Distribution



Where does this curve come from?

Properties of the Normal Distribution:

- 1.
- 2.
- 3.
- 4.
- 5.

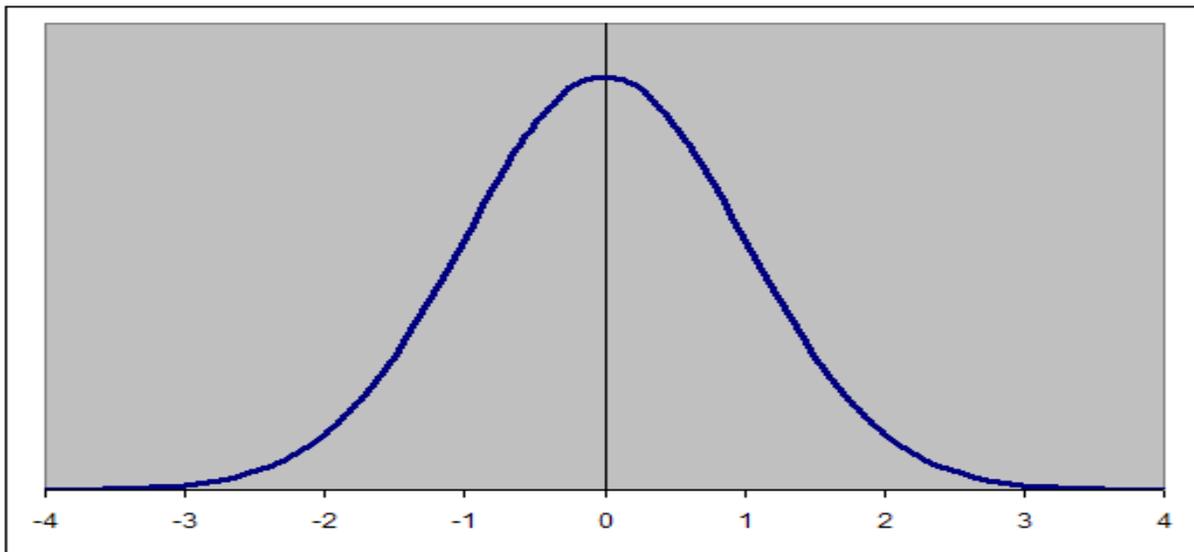
Find the following areas under the Standard Normal Curve:

- a. Between $z = 0$ and $z = 1.3$
- b. Between $z = -1$ and $z = 2.6$
- c. Above $z = 1.45$
- d. Below $z = -0.64$

Find the z-score corresponding to the area:

- a. 24% of the area is below that score
- b. 85% of the area is above that score

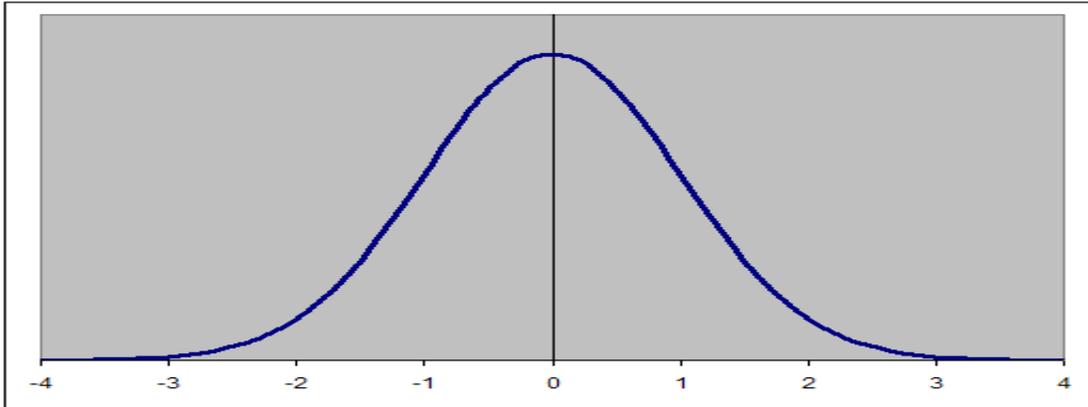
Property 6 of the Normal Distribution: 68 – 95 – 99.7 Rule.



The importance of the Normal Model is that many data sets can be described by a Normal Model, such as heights of males, heights of females, IQ scores, SAT scores, body temperature, etc.

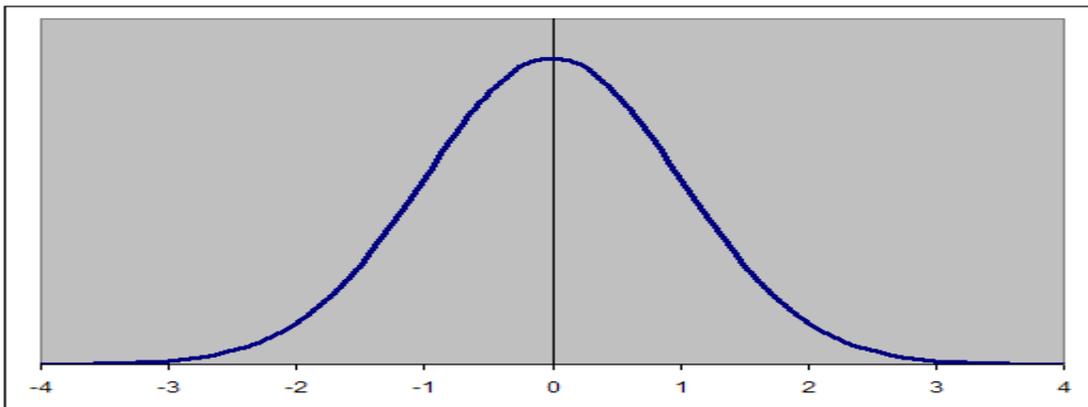
Heights: Are you tall, short, or average?

The heights of females in the United States follow an approximately normal distribution with a mean of 64" and standard deviation of 2".



1. What percent of females are between 62" and 66" tall?
2. What percent of females are shorter than 62"?
3. What percent of females are taller than 60"?

The heights of males in the United States follow an approximately normal distribution with a mean of 69" and standard deviation of 2.25".



1. What percent of males are between 64.5" and 71.3" tall?
2. What percent of males are taller than 71.3" tall?

Where do you fit within the distribution of heights for your gender? Some questions we can are listed below. Use your calculator to answer the following:

1. What percentage of the population is shorter than I am and what percent is taller than I am?
2. What is your z-score? (A z-score standardizes a raw score and shows how many standard deviations a raw score is above or below the mean.)
3. What percentage of the population of females is between 63" and 67.5"?
4. What height are 75% of the population of males taller than (75th percentile)?
5. A Yavapai College volleyball player (female) is 6' 2" tall and a Yavapai College basketball player (male) is 6' 5" tall. Based on the distribution above, who is taller in relation to the relation to the distribution of heights based on gender?